HYDRO-THERMIC RADIATION

CLARE BROS
& CO. LIMITED
PRESTON · ONT.
WINNIPEG · MAN

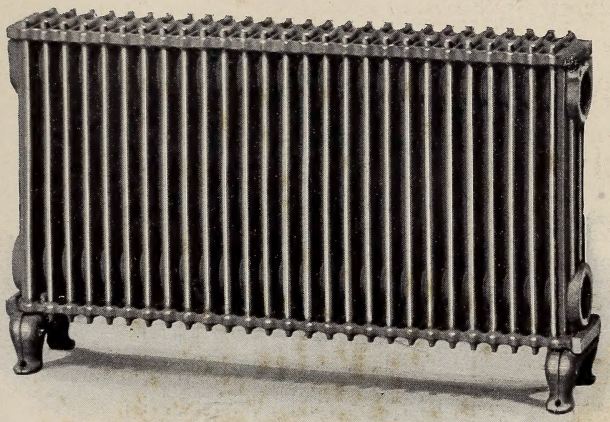
HYDRO - THERMIC RADIATORS

PATENTED

for

Hot Water and Steam

WALL OR FLOOR TYPE



Manufactured by

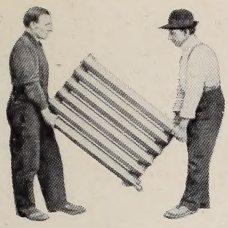
CLARE BROS. & CO., LIMITED

PRESTON, ONTARIO

WESTERN DISTRIBUTORS:

CLARE & BROCKEST, LIMITED, WINNIPEG, MAN.

BETTER HOT WATER HEATING



OW to do better Hot Water heating, how to decrease the consumption of fuel, how to make Hot Water systems respond more promptly to damper regulation, how to make the installation neater and more sanitary, how to bring down the cost without sacrificing efficiency: these are problems that every progressive heating contractor and heating engineer is trying to solve.

Many improvements have been suggested and tried out, and, because rapid circulation of water within a system makes for efficiency, fuel economy and quick response; most of the suggested improvements have had increased speed of circulation in view.

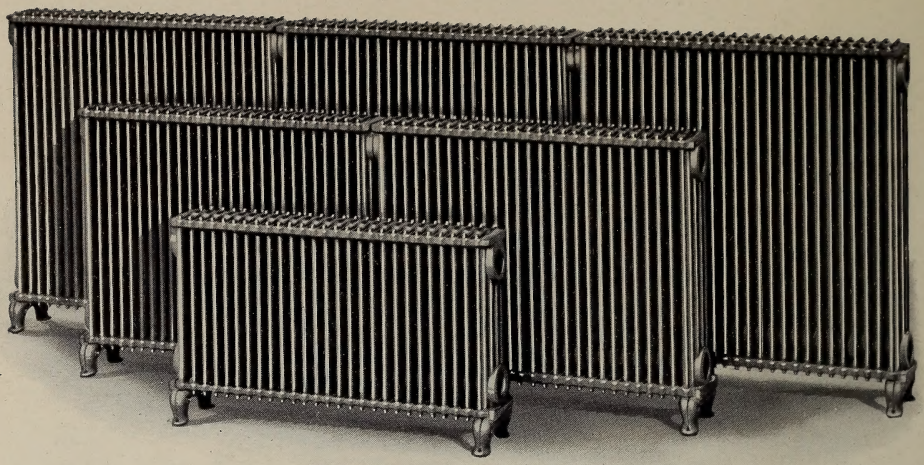
To secure the advantage of quick circulation, Hot Water heating systems have been fitted with contrivances to put the water under pressure, and, while in many cases good results have been obtained, there is, nevertheless, a very strong prejudice against putting under pressure a system in which the boiler and radiators are made of cast iron, because any failure of the pressure contrivance to operate promptly may result in the destruction of the heating system.

There are two ways in which speed of circulation can be increased with an open tank and, therefore, a safe system:

First, by making radiators with free waterways, so as to reduce friction.

Second, by decreasing the amount of water contained in a system.

Manufacturers of Cast Iron and Steel Radiators heretofore have not been able to take advantage of either one of the above-mentioned methods on account of the difficulties encountered in manufacturing Radiators. Radiator-making has been standardized to such an extent in recent years that practically all radiators, whether of cast iron or of pressed steel, are built up in

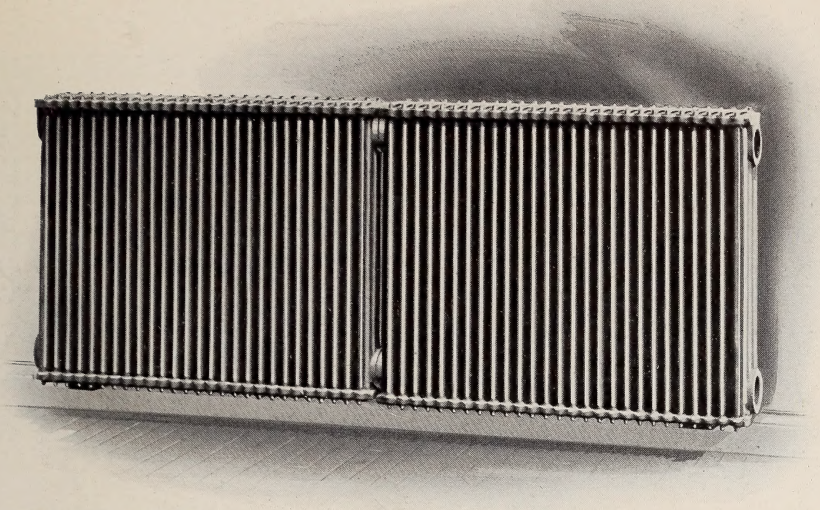


Hydro-Thermic Floor Type Radiation

sections, joined at top and bottom by nipples, and, in spite of the fact that in a standard height cast-iron radiator, containing 64 square feet, there are 14 such nipples, each one tending to impede free circulation, no method of construction that would eliminate the nipples or the friction has been discovered. Moreover, the reduction of the water content in the ordinary type of cast-iron radiator is limited by the difficulty of making thin dry sand cores, and, consequently, boiler and radiator manufacturers have been forced to seek the advantage of quick circulation by means of pressure contrivances.

We, however, are not bound by the difficulties that beset manufacturers of cast-iron radiators, and have, therefore, been able to approach the problem from a different angle.

We have succeeded in making a radiator in which friction is practically eliminated, that carries only half as much water, and that occupies only half of the room of cast-iron radiation. This type of radiator we have named HYDRO-THERMIC.



Hydro-Thermic Wall Type

Hydro-Thermic Radiation

Steam or Hot Water

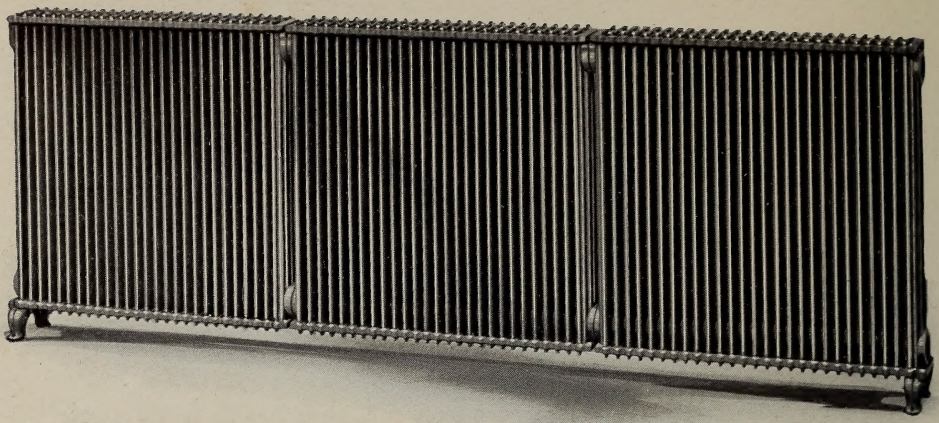
HYDRO-THERMIC RADIATORS are made in sections, containing from 6 to 48 square feet per section, and so arranged that they can be built up to any size required.

The walls are pressed from a special rust-resisting steel alloy, with tops and bottoms of cast iron fused to the walls.

The sections are 4 in. wide and vary in length from 9 in. to 24 in. and in height from $12\frac{1}{2}$ in. to $36\frac{1}{2}$ in., so that any variation of size and height can be supplied.

All radiators are tapped end to end or top and bottom, and, where twin connections are desired, we supply a special twin valve which saves the use of right and left nipples and elbows in making the connection.

On account of its light weight, Hydro-Thermic Radiation can be used either suspended from the wall or on legs. The legs are detachable, and special concealed brackets will be supplied free of charge for wall type.



Hydro-Thermic Floor Type

Hydro-Thermic Durability

HYDRO-THERMIC Pressed Radiation has been in use for the past seventeen years without showing any sign whatever of deterioration. These radiators were made by us without a proper equipment and of ordinary steel sheets, 22 and 24 gauges in thickness. They are now made with a modern equipment, and of a special rust-resisting steel alloy (C.B. Brand) made especially for this purpose, and four gauges heavier than that employed in the originals. With better equipment, heavier materials, rust-resisting sheets and a 17-year demonstration, there can be no question as to durability.

On the question of Radiation we submit an Engineer's report that will prove interesting

Berlin, May 1st, 1913.

Messrs. Clare Bros. & Co., Limited,
Preston, Ont.

Dear Sirs:

In reply to your request for a brief comparison of modern hot water radiation, duly considering past experience and present practice, the writer would beg to report as follows:

Generally speaking, standard hot water radiation is of two kinds:

(1) That which is made of cast iron.
(2) That which is formed or pressed from metal sheets.

CAST-IRON RADIATION.

This first class—cast-iron radiators—consists of sections of hollow-cored loops, fitted together and secured by bolts, slip or threaded right and left nipples. This form of radiator is largely used at present, and everyone is quite familiar with it, so an extended description is not required.

Highly developed as the cast-iron radiator is, still it is evident that the efficiency is low considering the weight and size in respect to radiating capacity. Sand cores, to make moulding possible, must have a given thickness, while molten cast iron also has a limit to the thinness to which it will flow. Thus it is admitted radiation of this type has been fully developed under present conditions of economic production.

Now, this excess weight means costly transportation charges and expensive handling by the fitters, while the excess size requires unnecessary occupation of most valuable space, and a piping system of generous size to carry the large amount of water required to supply the system, resulting in a system which is sluggish to draft regulation and therefore heats slowly. This latter feature is acknowledged to be the greatest defect in hot water heating systems with cast-iron radiation.

The success of cast-iron radiation is largely due to its strength, rigidity, durability, and ability to stand the strains of transportation and erection, as well as the ease of adjustment to size required either in the factory or after being installed.

PRESSED METAL RADIATION.

Pressed sheet radiation has been on the market for so many years that its durability is unquestioned. Its rapidly increasing popularity is due to its light weight, thinner water spaces, increased effective radiating surfaces, and the fact that it requires less space per square foot of radiation.

Whatever prejudice there has been against sheet metal radiation has been caused by the inability to stand the strains of transportation and installation, due to lack of rigidity, but aside from this the durability and power to stand corrosion and wear has been fully demonstrated.

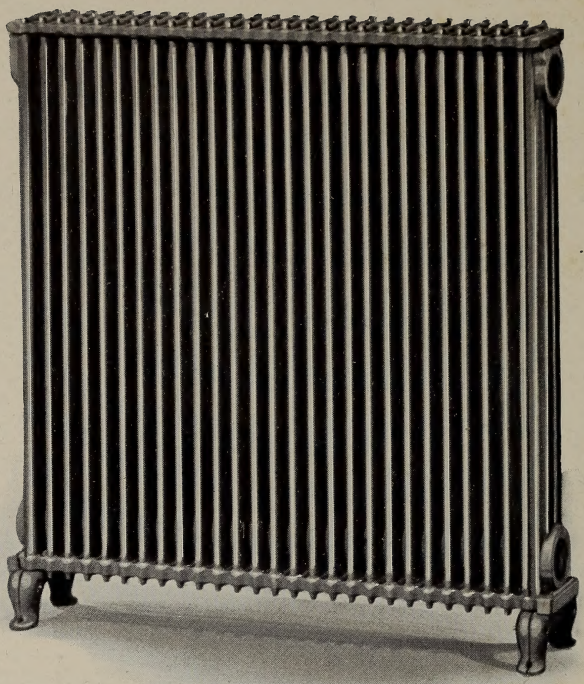
After due consideration we arrive at the conclusion that the ideal radiator would be one which combines the strength, rigidity and ease of adjustment of cast-iron radiation, but also embodies the invaluable features of formed metal radiation, viz., light weight, small size, and small water space and content with the resulting rapid circulation.

After a thorough examination of the HYDRO-THERMIC RADIATOR, the writer has become fully convinced that in this radiator have been combined all the above good features of cast-iron and pressed metal radiators, while all the experienced defects have been eliminated, and there has at last been produced a radiator which is at once strong, durable, and highly efficient.

Yours truly,

MAURICE A. WEBSTER,
B.Sc., C.E. (Penn.)

Construction Engineer,
Wm. Steele & Sons Co.,
Philadelphia-Toronto.



What You Save in Space

Compare this 32-foot Hydro-Thermic Radiator with one of similar capacity of cast iron:—

Hydro-Thermic.		Cast Iron.
24 in. long, 27 in. high, 4 in. wide.	Measurements	31 in. long, 26 in. high, $7\frac{1}{4}$ in. wide.
74 lbs.	Weight.	214 lbs.

Hydro-Thermic Radiators take less than half the space and save almost two-thirds of the freight.

Where Hydro-Thermic Radiators are Different and Better

FREE WATERWAYS.—In single section Hydro-Thermic Radiators, which can be supplied in sizes from 6 to 48 square feet, the waterways are absolutely free. In a 96-foot standard height cast radiator there are 22 nipples, each causing friction; in a Hydro-Thermic Radiator there are 2.

SMOOTH WATERWAYS.—The inside surfaces are smooth and clean, without the rough or sandy surfaces to be found in cast radiation.

EVEN THICKNESS OF THE WALLS gives even distribution of heat and an absence of strain.

THREE-QUARTERS OF A PINT of water per square foot as against one and a half pints per square foot in cast radiation. There is less water to heat, so it is heated quicker.

SMALLER PIPING can be used on account of the small water content and lack of friction in circulation. We advise $\frac{3}{4}$-in. pipe up to 40 feet; 1-in. pipe up to 80 ft.; $1\frac{1}{4}$-in. pipe up to 120 ft.

ECONOMICAL INSTALLATION follows from the use of smaller pipe both in cost of material and cost of labor.

OCCUPY LESS THAN HALF THE SPACE OF cast-iron radiation of corresponding size. They are only 4 inches in width, and do not project into the room like a $7\frac{1}{2}$ to $9\frac{1}{2}$ cast-iron radiator.

WEIGH FROM 2 TO 3 POUNDS per square foot instead of 6 to 7 pounds, as in cast-iron radiators. This means:

LOWER FREIGHT CHARGES.

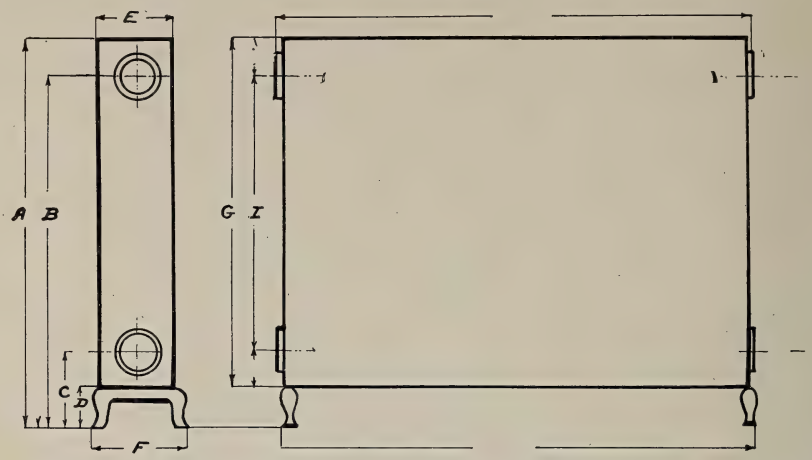
LOW COSTS FOR TEAMING AND HANDLING.

GREATER EASE IN PLACING.

CAN BE SUSPENDED FROM THE WALL on account of their light weight, leaving the floor clear for cleaning.

SMOOTH SANITARY EXTERIOR, with no places for dust to lodge.

HYDRO-THERMIC RADIATORS
DIMENSIONED DRAWING



Height of Radiator.	A	B	C	D	E	F	G	I
13½	15½	12⅝	4¾	2	4	5½	13½	7⅞
19½	21½	18⅝	4¾	2	4	5½	19½	13⅞
25	27	24⅜	4¾	2	4	5½	25	19⅝
31	33	30⅜	4¾	2	4	5½	31	25⅝
37	39	36⅜	4¾	2	4	5½	37	31⅝

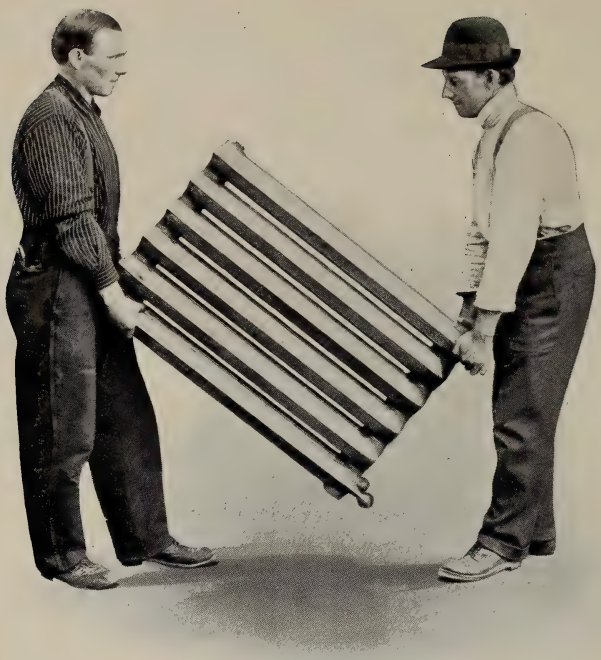
Hydro-Thermic Radiation

For Steam or Hot Water

CAPACITIES AND DIMENSIONS

Length of Radiator	Heating Surface in Square Feet					Length of Radiator	Heating Surface in Square Feet				
	13½ inches high	19½ inches high	25 inches high	31 inches high	37 inches high		13½ inches high	19½ inches high	25 inches high	31 inches high	37 inches high
9¾			12.	15.	18.	54¾	36.	54.	72.	90.	108.
12¼	8.	12.	16.	20.	24.	57¾			76.	95.	114.
15¼			20.	25.	30.	60¾	40.	60.	80.	100.	120.
18¼	12.	18.	24.	30.	36.	63¾			84.	105.	126.
21¼			28.	35.	42.	66¾	44.	66.	88.	110.	132.
24¼	16.	24.	32.	40.	48.	69¾			92.	115.	138.
29¼			36.	45.	54.	72¾	48.	72.	96.	120.	144.
30½	20.	30.	40.	50.	60.	77¾			100.	125.	150.
34¾			44.	55.	66.	79	52.	78.	104.	130.	156.
36½	24.	36.	48.	60.	72.	82¾			108.	135.	162.
40¼			52.	65.	78.	85	56.	84.	112.	140.	168.
42½	28.	42.	56.	70.	84.	88¼			116.	145.	174.
46¼			60.	75.	90.	91	60.	90.	120.	150.	180.
48½	32.	48.	64.	80.	96.	94¾			124.	155.	186.
51¾			68.	85.	102.	97	64.	96.	128.	160.	192.

	13½ inches high	19½ inches high	25 inches high	31 inches high	37 inches high
Height on legs	15½ in.	21½ in.	27 in.	33 in.	39 in.
Weight per square foot	3.04 lbs.	2.75 lbs.	2.30 lbs.	2.22 lbs.	2.09 lbs.
Add ¼ in. for each malleable bushing.					
Distance from floor to centre of bottom opening	4¾ in.	4¾ in.	4¾ in.	4¾ in.	4¾ in.
Distance from floor to centre of top opening	12⅝ in.	18⅝ in.	24⅜ in.	30⅜ in.	36⅜ in.

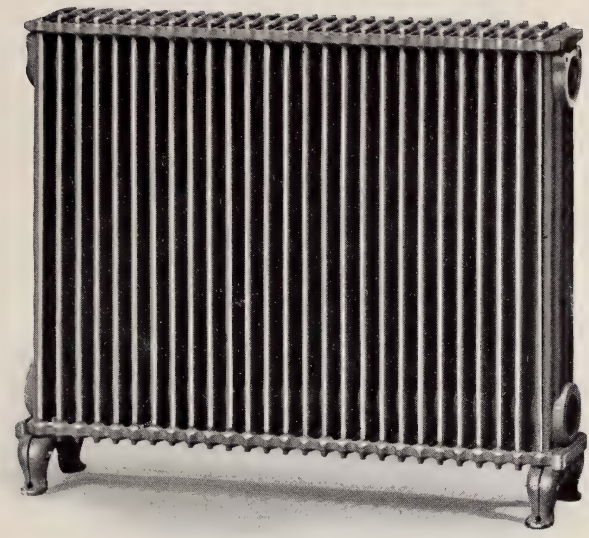


What You Save in Labor

It takes two men to handle this 48-foot cast-iron Radiator, which weighs 318 lbs. On page fourteen we illustrate one man carrying a 48-foot Hydro-Thermic Radiator; weight 106 lbs.

Hydro-Thermic Radiators will cut your labor costs. One dealer writes us as follows:—

"I connected up one of your 96-foot Hydro-Thermic Radiators a few days ago, and am very much pleased with it. I am doing a large business, and if I had been able to get these Radiators last year I would have saved $50 in labor in placing Radiators in one building."



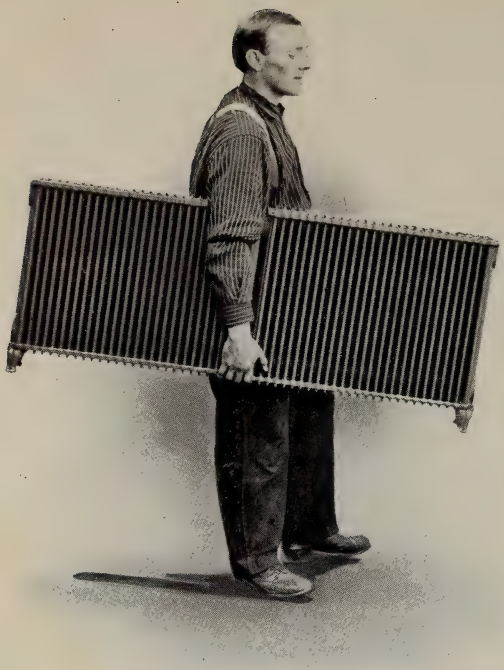
What You Save in Freight

Take a job in which you require 636 feet of radiation, with a 30-cent freight rate.

Using cast-iron radiation the freight amounts to $13.56.

Using Hydro-Thermic radiation the charges would be $4.45.

The saving in freight alone amounts to between 75 cents and $1.00 per radiator.



THIS man is handling a 48 ft. Hydro-Thermic Radiator. It weighs 106 lbs.

Hydro-Thermic Radiators cut down

Freight charges.
Cartage charges.
Handling expenses.
Placing costs.

Tapping for Hydro-Thermic Radiators

All Hydro-Thermic Radiators are tapped single $1\frac{1}{2}$ top and bottom, right at one end and left at the other.

These openings will be bushed as ordered without extra charge.

Unless otherwise specified, all radiators will be shipped with single end to end tapping.

Instructions for Ordering

In order to avoid misunderstandings and to save unnecessary correspondence, we request a careful observance of the following instructions:

(1) Give the number of radiators.
(2) Give the number of square feet in each.
(3) Give the height of each.
(4) State if to be used with our special twin connection valve.
(5) If not, give size of tapping, stating whether end to end or top and bottom.